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WAR DEPARTMENT.

REPORT

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YELLOWSTONE EXPEDITION OF 1873,

BY

D. S. STANLEY,

COLONEL TWENTY-SECOND INFANTRY, BVT. MAJ. GENERAL, U. S. A.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
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REPORT.

HEADQUARTERS YELLOWSTONE EXPEDITION,
Fort Abraham Lincoln, Dak., September 25, 1873.

SIR: I have the honor to make the following brief report of the marches and service of the troops under my command upon the expedition to the Yellowstone River during the past summer. The expedition was organized by virtue of Special Orders No. 73, Department of Dakota, dated Saint Paul, Minn., April 13, 1873, and was designed for the protection of engineering surveyors of the Northern Pacific Railroad.

The composition of the force was as follows:

Ten companies Seventh Cavalry; Lieut. Col. G. A. Custer, Seventh Cavalry, commanding.

Ten companies Eighth and Ninth Infantry; Lieut. Col. L. P. Bradley, Ninth Infantry, commanding.

Three companies Seventeenth Infantry and one company Sixth Infantry; Maj. R. E. A. Crofton, Seventeenth Infantry, commanding.

Five companies Twenty-second Infantry; Capt. C. J. Dickey, Twenty-second Infantry, commanding.

Detachment of twenty-seven Indian scouts; Second Lieut. D. H. Brush, Seventeenth Infantry, commanding.

One company Twenty-second Infantry (E) was organized as pioneers; two Artillery squads, manning two 3-inch Rodman guns, being selected from the same company.

As a part of the military force, I was authorized to hire scouts, guides, and interpreters, and employed seven half-breeds in that capacity. The transportation, including every wheeled vehicle, amounted to 275 wagons and ambulances. The civilian employés numbered 353 men. The number of mules and horses to be foraged was 2,321.

The expedition was ready and started on the 20th of June; the effective force that morning being 79 officers and 1,451 men.

Four days previous to the main column leaving Fort Rice, a detachment of four companies of the Eighth Infantry, a squad of one officer and 25 men Seventh Cavalry, and one company Sixth Infantry, from Fort Abraham Lincoln, had been directed to escort the engineering party from the crossing of the railroad on the Missouri River to such point as the main force might overtake them.

One of the difficulties at the outset was to learn the probable rate of daily travel the engineers would accomplish to the Yellowstone. This was finally settled by the conclusion that 60 days' rations and forage would be required, the latter being reduced to five pounds. The carrying of this amount of supplies, in addition to necessary camp-equipage, loaded our wagons unreasonably heavy; the lowest being 4,000 pounds to a wagon, while the strong teams were taxed with 5,280 pounds. With these heavy loads the necessity of returning a train to the Missouri River for supplies seemed apparent, as we could start with only 42 days' forage, at five pounds. The expedition might still have gotten

along the march with reasonable speed, but for the setting in and continuing of rains unprecedented in my experience in this climate.

For the first seventeen days of our march it rained fourteen days, in some instances three or four heavy rain-falls in twenty-four hours. The consequence of this rain was that the usually hard prairie became a swamp, and the fifth day's march the entire day was spent making four miles on a level prairie, usually as good as a macadamized road.

The route taken was due west from Fort Rice to the great bend of Heart River, and owing to the heavy rains we were six days in making 45 miles, and were then detained by high water at Heart River crossing one day. As soon as across Heart River, I sent my chief guide, Basil Clement, with one company of cavalry, to hunt up the engineering party; the same day the squad of cavalry heretofore mentioned as forming part of the escort to the engineers arrived in camp, bringing dispatches from Mr. Rosser, chief engineer, and Maj. E. F. Townsend, Ninth Infantry, in command of the escort, informing me of having been overtaken by a most furious hail-storm two days previous, (the 24th,) in which men had barely escaped with their lives, and the animals stampeding on the march had broken up their wagons to such an extent as to completely cripple both engineers and escort.

The command was put in motion the morning of the 27th: the cavalry being sent light with the mechanic's outfit to join the engineers and repair damages. The cavalry reached the engineers by marching due north from the bend of Heart River, and crossing to the left bank of the Muddy the same evening. The heavy train, escorted by the infantry, labored painfully two days to reach the Muddy, and next day, the 29th of June, the usually little sluggish slough was converted by the rains into a river 60 feet wide and probably 20 feet deep.

Through the ingenuity of my chief commissary, Second Lieut. P. H. Ray, Eighth Infantry, pontoons were immediately made by filling wagon-beds with empty water-kegs, confined by lashing, and inverting the beds, and a good bridge being formed, the command was passed over by the evening of the 1st of July. The time had now come when either one of two movements I had been instructed verbally by the department commander to make became possible from the lightening of our loads. One of these movements was to push a light force at once to the Yellowstone, the other to send back to Fort Rice for additional supplies. Both of these movements could not possibly be carried out at once, the condition of the transportation being so bad that success in both could not be expected if attempted simultaneously. From the outset the feasibility of establishing a depot on the Yellowstone, to be supplied by steamboat, had been doubtful; therefore, after due consideration, I sent forty-seven wagons back to bring up additional forage and rations.

Although I had met the chief engineer of the survey while the command was crossing the Muddy, he had said nothing about a change from the original plan of his survey; and only on the 5th day of July, on which date I was first able to bring the infantry and train up to the engineers and cavalry escort, Mr. Rosser informed me he had changed his plans, and would connect his present work with the survey of 1871, and push on for the Yellowstone. On the 7th of July the command set out to march to the Yellowstone. The route followed was that of Major Whistler's march in the fall of 1871. We found the Little Missouri quite full; it is a very difficult stream on account of its deep quicksands, and at first trial it appeared we would either have to bridge it eighty feet wide or wait for the waters to subside. This difficulty was thoroughly overcome by first putting in our large herd,

700 head of beef-cattle, and afterward all the cavalry, driving and marching back and forth until in one hour the sand became as firm as a Russ pavement. After getting out of the Bad Lands of the Little Missouri, I directed the guide to leave Whistler's trail to the right and strike the divide between Glendive's Creek and Cedar Creek. This route proved a success, and we arrived upon the Yellowstone the 13th of July. Lieut. Col. Custer, with two squadrons of cavalry, reached the mouth of Glendive's Creek by a very difficult bridle-road, finding the depot established at that point, and the steamboat Key West awaiting our arrival. Colonel Custer informed me by note next morning of the impossibility of reaching the mouth of Glendive's Creek, and the unsuitableness of the site for a temporary post. I directed the transfer of the stores, and erected a strong bastioned stockade upon the south bank of the Yellowstone, eight miles by land above Glendive's Creek.

Moving the stores and ferrying the troops and trains across the river occupied until the 26th of July. A garrison of one company of the Seventeenth Infantry and two companies of the Seventh Cavalry was left at the stockade, and on the 26th the march up the left bank of the Yellowstone was commenced. As the engineers had a day's work to do on the opposite bank of the river from the command, the Key West was detained one day, and ran up to the mouth of Cabin Creek with Major Crofton's battalion of the Seventeenth Infantry and Sixth Infantry as guard for the engineers. On the 28th we started to make the detour necessary to pass the Bad Lands, which run bluff upon the Yellowstone opposite the mouth of Powder River. This route carried us directly north, directly away from the Yellowstone about twenty miles.

After four days' hard marching and a great deal of labor in road-making, we found ourselves back upon the river. Our chief difficulty was after having gotten the train upon the high plateau north of the mouth of Powder River, to find any place to get down the steep "bad-land" bluffs, which break down abruptly upon the valley of the Yellowstone. Fortunately, we found a creek, which I named Custer's Creek, by the bed of which the descent was possible. The distance through the Bad Lands was sixty miles. There is no permanent water for forty miles, and grass is very sparse. We found the steamboat Josephine eight miles above the mouth of Powder River, Capt. William Ludlow, of the engineers, having brought the boat up with a supply of forage and some necessary clothing. The same night we met the Josephine we had the first evidence of the presence of Indians, the camp-guard firing on Indians during the night, and the trail of about ten being plainly seen going up the valley next morning.

In marching up the Yellowstone, an escort of one company of infantry and one of cavalry took care of the surveying party, which aimed to follow the valley. The train had to make many detours, leaving the valley and crossing the plateaus when the river ran close to the bluffs. This, getting upon the high grounds, occurred thirteen times from Powder River to Pompey's Pillar, and generally the ascent and descent were very difficult. The lateral arroyas or gullies of the Yellowstone Valley, being cut down into a clay soil, require a great deal of digging to make them passable for a large train. On the 4th of August one of the detours from the river was made. We were then opposite the mouth of Tongue River. The day was excessively hot, and the march very long and tedious. I had sent Lieut. Col. Custer ahead to look up the road, a service for which he always volunteered. About 2 p. m. I came up to one of my scouts, who told me there was firing ahead, but

thought it was at buffaloes, as he had observed a trail of these animals going in that direction. Shortly two scouts and a cavalry straggler ran in and said they had been pursued by Indians. I sent all the cavalry to support Custer, but he had an hour before driven his opposers miles away. Colonel Custer had gained eight or ten miles ahead of the train, and had unsaddled to graze his animals, when his pickets signaled six Indians approaching his position; these were only in decoy, and when Colonel Custer, who followed their movements with a few officers, declined to follow them to the adjoining thicket of cotton-wood 250 or 300 warriors rode out, and immediately attacked Custer's troops. The squadron was about eighty strong; and as the Indians were much more numerous, Colonel Custer fought defensively and on foot, until finding the Indians had nothing new to develop, he mounted his squadron and charged, driving and dispersing the Indians in all directions. Six Indians were seen to go off toward the main column during the skirmish; these six waylaid and killed Veterinary Surgeon Honsinger, Mr. Baliran, a trader, and a soldier of Company F, Seventh Cavalry, named Ball. The first two were unarmed non-combatants; the soldier was surprised at a spring, and probably killed before he could make any defense. The bodies of the civilians were found unmutilated; the soldier's remains were only found as we returned in September. On the 5th, 6th, and 7th, Indians on the bluffs continued to watch the column, but it was not until the 8th, and when about opposite the mouth of Rose Bud River, that we discovered that a very large Indian village was fleeing before us. Pursuit was resolved upon, and at 9 p. m. that night Lieut. Col. Custer left with all the cavalry and Indian scouts to try and overtake the village. The troops carried seven days' short rations and 100 rounds of ammunition per man. The trail was followed that night, a part of the 9th, and the succeeding night, when, upon the morning of the 10th, it was discovered that the Indians had crossed the Yellowstone in skin-boats and rafts three miles below the mouth of the Big Horn River. Colonel Custer tried industriously all day the 10th to cross. The river was very deep and swift, and our American horses would not take it; and although he got a picket-rope across, the least strain would part it. The Indians settled the matter by attacking him next morning at dawn, firing across the river, at this point about 700 feet wide. After firing across the river had become general, Custer found himself assailed from the bluffs 600 yards in his rear; pushing up a skirmish-line on foot in the latter direction, Colonel Custer formed each squadron into a separate column, and charged the Indians, driving them eight or ten miles from the field. The main column with the train came in sight of Colonel Custer's position at 7 a. m. Indians in very large groups had collected out of rifle-range on the high bluffs across the Yellowstone. I directed Lieutenant Webster, Twenty-second Infantry, in command of the section of artillery, to shell these groups; he threw several shells, very well aimed, producing a wonderful scampering out of sight. An hour afterward, a few more shells at a group of warriors caused the fastest kind of running. One officer was severely wounded, one private killed and two wounded, and, summing the two engagements, we lost four killed and four wounded, and five horses killed. The Indians engaged in these affairs against this expedition lost in killed and wounded, but I cannot pretend to say in what numbers, as I was not present on either occasion during the fighting. I would respectfully refer to the report of Lieut. Col. G. A. Custer, heretofore forwarded to department headquarters. From citizens' clothing, from coffee, sugar, and bacon dropped, from the shells of patent ammuni-

tion found on the field, from two new Winchester rifles found on the first field, it is certainly true that these Indians were recipients of the bounty of the United States Government; and as they were mostly Unepapa Sioux, they had at no long time since come from that center of iniquity in Indian affairs, Fort Peck. Taking one day to provide for the wounded, we resumed the march, reaching Pompey's Pillar on the 15th of August. We remained one day at this, the limit of our march upon the Yellowstone. Upon the morning of the 16th a ludicrous incident occurred, which might have had a tragic termination. The river was full of bathers, when six Indians rode out from behind cover on the opposite bank, and fired a volley into them. Of course, there was a scampering of naked men, none of whom, fortunately, were hit. On the 17th, 18th, and 19th we crossed the divide to the Muscleshell River. The march was 60 miles in a direction west of northwest. The second and third days' marches were made upon the trail made last year by Colonel Baker. There are no springs on the divide, the grass is very poor, and but for a copious rain, which fell the evening of the 14th, we must have fared very badly. The night of the 19th I sent Reynolds and Norris, two daring scouts, to Fort Benton with dispatches. Mr. Frost, a young gentleman from Saint Louis, and two young Englishmen, Messrs. Clifford and Molesworth, who had accompanied the expedition for adventure, went through with the scouts.

Fortunately, all arrived safely at the settlements. Setting out the morning of the 20th, we continued down the Muscleshell River 65 miles, mostly due west. Progress was slow, principally from the great amount of fallen timber we had to remove to make a wagon-road. The command reached the Big Bend of Muscleshell, where this river turns a little west of north to its junction with the Missouri. The official map of the Engineer Department is of little use to the traveler in the Muscleshell country; the river being placed wrong on the map, trails and small streams out of place. Resting one day at the great bend of the Muscleshell, I sent the guides forward to look for water in the direction of our starting at the stockade on the Yellowstone. The reports being favorable, as there were pools remaining from the heavy rain of ten days previous, on the morning of the 27th we left the Muscleshell, moving due east, which course was continued next day. Since leaving Pompey's Pillar we had passed over a country almost destitute of grass. The Muscleshell Valley is fertile, and, uninhabited by game, would furnish good grazing; but our march had been preceded by thousands of buffaloes, and the grass was completely exhausted. I decided to send Lieut. Col. Custer, with six companies of cavalry, in charge of the surveying party, by the direct route to the stockade, while I took the train and main force by way of the Yellowstone Valley to try and recruit our exhausted animals. Colonel Custer made the marches in five days of 22, 22, 25, 35, and 10 miles. He will furnish a map and report. From the point of separation with Custer's command, which is on the middle branch of the Great Porcupine, three hard days' marching brought the train to the Yellowstone, at the mouth of the Little Porcupine. This route from the Muscleshell River to the Yellowstone was the most trying to our stock of any part of our route for the summer. This soil is light and sandy, producing nothing but cactus and stunted weeds; no springs of any capacity exist; the Porcupine Creeks are only great water-drains after rain-falls, and, but for the timely rain preceding our march, it would have been ruinous to try to pass the route with our jaded stock. The march down the Yellowstone was made by easy journeys to benefit the stock; and in passing the Bad Lands we

improved and straightened the trail of our outward march, arriving on the Yellowstone opposite the stockade on the 9th of September. The steamer Josephine arrived the same day, and the four succeeding days were employed in ferrying over the command, and preparing for the homeward march. As the engineers had additional work in the Bad Lands of the Little Missouri, Lieut. Col. Custer, with six companies of the Seventh Cavalry, was crossed on the 10th, and left the morning of the 11th, escorting the engineers. The surplus commissary stores, amounting to eighty tons, mostly flour, hard bread, and bacon, were loaded on the Josephine, which also took the battalions of the Eighth and Ninth Infantry and Captain Powell's company of the Sixth Infantry. I had recommended this in my dispatch of the 19th of August, and when I was on the Yellowstone no one doubted the propriety of sending the troops by boat. Captain Marsh, the master of the steamboat, assured me he had one foot more water than when he ran the Key West up the Yellowstone last May. The officers were all pleased with the arrangement, but as the Josephine is, at date of this writing, unheard of, her fate is a matter of very great anxiety to me.

The command left the Yellowstone on the morning of the 14th of September, and marched to this place in nine days, averaging twenty-three miles daily. The number of days the expedition was out is 95; the number of camps made is 77; in six instances we only shifted camp for grass, making the number of camps at the end of a march, 71. The total estimated distance is 935 miles; the average daily march, $13\frac{4}{7}$ miles. Odometer measurements were taken; but as the instrument frequently was out of order, its record is not reliable. The above estimate is the lowest, and the real distance will probably exceed this one. Twelve wagons were abandoned for want of teams; these were old ones, and had been condemned at Fort Abercrombie. From eighty to ninety mules were killed or abandoned, having given out completely, mostly on that part of the march from Pompey's Pillar to the Muscleshell River, and thence back to the Yellowstone.

As accuracy should be aimed at in making up a general Government map, I will submit as soon as possible a copy of the railroad-survey, with additions where the wagon-road and survey diverge.

In a supplementary report I will try to convey to the department commander my impressions of the country passed over; also, such remarks upon the staff departments as I deem appropriate or usetul.

In conclusion, I desire to express my satisfaction with the conduct and efficiency of the troops I have had the honor to command upon this expedition.

I am, very respectfully, your obedient servant,

D. S. STANLEY,
Colonel Twenty-second Infantry, Commanding.

Maj. O. D. GREENE,
Assistant Adjutant-General Department of Dakota,
Saint Paul, Minn.

HEADQUARTERS FORT SULLY, DAK.,
October 12, 1873.

SIR: In connection with my report upon the Yellowstone expedition of last summer, I desire to submit, first, description of the country passed over.

The country west of the Missouri, and bounded north by Knife River and south by the Cannon Ball, is quite uniform in character, and can best be described as first-class grazing-lands. The line limiting this grass country westward would be a north and south line, about seventy-five miles west of the Missouri River.

Throughout this area of country the soil is generally a black loam 12 to 16 inches in depth, which appears to hold moisture well, and the grasses are luxuriant and rich. The two seasons I have had experience of the country have been seasons of abundant rains, and if such be the conditions throughout a series of years, I am confident this will be a country very productive of wheat and small grains.

Timber is very scarce and confined to the streams, but outcroppings of coal are found on all the streams, and the fuel question will be one of the least difficulties the settlers will encounter.

For a prairie country it is well watered; the small streams, though ceasing to flow in the dry season of fall, abound in holes well filled with living springs of good, sweet water.

Limestone is found on Heart River, but apparently only in the drift-deposits, and sandstone is found throughout, but is friable and soft, and of doubtful utility for masonry.

Only the hostility of the Sioux and the yearly prairie-fires prevent this country soon settling up with a successful population of pioneers. The face of the country is gently rolling, with occasional buttes from 50 to 300 feet in height, and abrupt breaks down into the valleys of the larger streams.

Leaving this fertile belt, passing westward, we find a belt of thin soil and short grass from thirty to fifty miles wide, extending to the divide between the streams running to the Missouri and the Little Missouri. This country has a sandy soil, the ridges and buttes taking the "bad-lands" character of bare clay, with perpendicular walls, ridged and guttered by the action of water. This belt still abounds in springs, and coal is found exposed by the washing of all the streams. The divide before mentioned is a very sharp backbone, and the descent to the Little Missouri is very abrupt, and can be made by wagon-trains only by following the valleys and beds of the streams running in from the east.

This valley of the Little Missouri is the country of the Bad Lands, and the pencil of the artist, even, must fail to give any idea of the extremely rugged and wild nature of the scenery. The hills are in the main bare, and mostly made up of clay, but the top, and in some cases the entire mass, of the usually conical hills which make up the Bad Lands is composed of a red shale, as deep in color as the best-burned brick. This gives a very variegated scenery, as the colors vary from a pale gray to a brick-red. These hills, which are piled together most promiscuously, apparently without system, are almost all some form of the cone, and yet there is no evidence of volcanic action. Could the burning-out of the great coal-beds underneath the clay account for the brickish appearance of the loose stones composing these red hills?

The Little Missouri, 150 miles from Fort Rice, has a bed 200 feet wide, and during the spring and early summer is usually from two to three feet deep. The bed of this stream is of the worst kind of quicksand. Timber is abundant; cotton-wood on the river; ash, oak, and box-elder on the small tributaries. Twenty miles south from the crossing, at the mouth of Davis Creek, pine of good quality becomes quite abundant. The valley of the Little Missouri varies from one mile to a quarter of a mile in width, and affords excellent pasturage; the hills contain sand-

stone rock, apparently fitted for building. All the water-drains running into the Little Missouri expose coal-beds, some of which were found 12 feet in thickness. The coal appears to be fully equal to the Iowa coal in quality, and it was found by trial that it is excellent fuel. The road westward from the Little Missouri follows the bed of a small stream, and the first ten miles lead over a very rugged and difficult country. The road passes a few miles north of the "Buttes which look at each other," (Sentinel Buttes on the map,) hills of some 350 feet elevation above the surrounding country, having flat tables of land on top, containing each several hundred acres. These buttes are five miles apart, and are by far the most prominent landmarks in all this region; they can be seen, and, in turn, overlook the country, for a hundred miles toward all points of the compass. The country, from the Little Missouri to Beaver Creek, 35 miles, has a thin soil and indifferent grass, with a good deal of barren, cactus-bearing surface. Water occurs in springs at easy distances. Beaver Creek has permanent water, not running in dry seasons; the hills are low, which bound the valley from one-half mile to a mile in width. Timber is very scarce; water and grass, good.

From Beaver Creek to the Yellowstone the country is poor, abounding in cactus.

The wagon-road follows the divide between Glendive's and Cedar Creeks, both of which cut deep valleys, the descents into which are very precipitous. Cedar Creek is distinguished from all other tributaries of the Yellowstone by its large brakes of scrub-cedar, which continue from its head-branches to its mouth. Many of these brakes are several thousand acres in extent, and from the wagon-road cedar-forests are always in sight.

The road from Beaver Creek to the Yellowstone is a good one, and good spring-water can be found near the head of Glendive's Creek.

The Yellowstone is certainly, viewed alone as a river, without taking in the rugged and poor country adjacent, one of the most beautiful rivers in the world.

During July and August the river was quite full, and averages over 1,000 feet in width, with over 4 feet of water on the bars. The average current has a rate of six miles an hour, and from some reason appears to the eye more swift than that rate would indicate.

The water was, in July and August, quite clear, and was universally pronounced the finest drinking-water in the world. There is something peculiarly light about Yellowstone water, which permits a thirsty person to drink huge draughts with impunity. I believe that from its numerous falls and rapids, its swift current, and constant agitation by its pebbly bed, the water of the Yellowstone is aerated to a degree no other water is. Coming from perpetual snow may be another element in making up its excellence.

The valley of the Yellowstone is, upon an average, about two miles in width, and the hills bounding the valley average 300 feet in height.

Where the river cuts the face of these hills, they are perpendicular walls; where the hills rise from the valleys, they are usually well-rounded, smooth hills. The poorest portion of the Yellowstone Valley lies between the mouth of Glendive's Creek and Powder River. The soil of the valley for this distance of fifty miles is thin and sandy, and the timber on the river occurs in small clumps, and is too small for building purposes. The Bad Lands which come down to the bluff on the Yellowstone, opposite the mouth of Powder River, compel a detour to the north to regain the valley of the Yellowstone in going up the river.

By keeping back fifteen or twenty miles from the river we found a

tolerable road. The country is poor and water is only found in pools after rain.

It is in this region that coal was found most abundant. One cut bluff of coal was observed eight miles above Powder River, which measured 16 feet on the exposed face, and its horizontal area seemed immense. This coal is, from all appearances, equal to the block-coal of Indiana.

The valley of the Yellowstone becomes much richer above Powder River; the grass is rank and of the finest varieties. Timber does not become abundant until we reach the mouth of Tongue River, from which point heavy bodies of timber (cotton-wood) continually line the river on one side or the other all the way to Pompey's Pillar.

The cotton-wood is more abundant and is of a better quality than in any part of the Missouri Valley from Sioux City to Fort Benton. Pine of the scrubby variety is found in small quantities near the mouth of Powder River and Tongue River.

At the mouth of Rose Bud, pine increases in quantity and quality, and continues to improve as we pass up the river. The pine is sound and large enough for all building-purposes, but will not, I think cut into clear pine lumber. Abundance of pine will be found on this part of the Yellowstone for all railroad and building purposes. Some portions of the course of the Yellowstone have valleys on each side of the river, but usually a valley on one side is mated by a bluff on the other. There is a valley fifteen miles long and two miles wide, reaching above and below the mouth of Tongue River, on the same side as that river.

Just above Tongue River a valley, twelve miles long and two miles wide, occurs on the opposite side from Tongue River, and another valley, fifteen miles long and two in width, occurs opposite the mouth of Rose Bud River. These large valleys have wood in abundance, good grass on the lower bench, and generally rank sage-brush in the higher parts of the valley.

If the Mormon theory be true "that anything will grow where the sage grows, provided the ground can be irrigated," these valleys will some day be very productive, as it will not be a difficult thing to irrigate any portion of the Yellowstone Valley from the river itself. The "bad-lands" character of the hills of the Yellowstone disappears at the Little Porcupine. The hills from this point to Pompey's Pillar are not so high, and clay bluffs are replaced by sandstone of a hard variety. No limestone has been found on the Yellowstone. The hills now become covered with pine and the scenery much more pleasing. The road is alternately in the valley or on a high ridge, where we leave the valley at the points the bluffs run to the river.

The water-drains running into the Yellowstone on the north are short, very numerous, and for the most part only rain-water drains. Maynadier's and Custer's Creeks have abundance of living water, but the two Porcupines, the largest tributaries on the north of the river, are only great rain-drains. Rising close to the Muscleshell River, and draining a vast country, descending rapidly to the Yellowstone, these Porcupine Creeks are at times torrents of great volume. The excess of bluffs is on the north side of the river, the side we marched up. We had to ascend the bluffs thirteen times from Glendive to Pompey's Pillar, and the whole distance a railroad would have to make bluff-cuttings would amount to nearly forty miles.

On the south side of the river the bluff-cuttings would not exceed ten miles, and as this side receives the five rivers—Powder River, Tongue River, Rose Bud, Emmel's Creek, and Big Horn—whatever interest

attaches to this country as the future territory of a civilized community belongs south of the Yellowstone.

The Tongue River Valley, where it joins the Yellowstone, is as large and as well timbered as the Yellowstone Valley. The view of the junction of the Big Horn and Yellowstone is really magnificent. The two rivers can be seen for a great distance before their junction, and the combination of water, timbered valleys, rich prairie-bottom, rugged rocky bluffs, and pine-clad mountains gives a pleasing sensation not to be forgotten by the fortunate sight-seer. From Big Horn River to Pompey's Pillar—thirty miles—the road is on the bluffs. Pompey's Pillar is a knoll on the south side of the Yellowstone, separated by the action of water from the rocky bluffs on the north side; it is 150 feet in height, and presents a perpendicular face to the river. The top has a grass sod, one acre in extent, and in fact the knoll looks like anything but a "pillar."

On the south of the river, a broad valley extends for fifteen or twenty miles; the river becomes more narrow, but is deep, and runs in a swift current of clear water. We here caught fine specimens of the trout, differing from the mountain-trout only in the speckle being black instead of red. Fine fish were caught everywhere in the Yellowstone, mostly catfish of the finest kind, and a whitefish in shape and appearance like the lake whitefish, and equally good for the table. From the Yellowstone the direction of the Muscleshell River was west of northwest: the distance sixty miles.

This is a barren, cactus country. Pine and cedar are found in all the water-drains and hill-sides. At forty miles from the Yellowstone, we encountered the divide between the Yellowstone and the Muscleshell in a perpendicular rocky wall 300 feet high. We here struck Major Baker's trail of last year, and his guides had found the only place this bluff was accessible for many miles. Having ascended this height, we found an extensive table-land twelve miles across, where it again breaks down as suddenly to the Muscleshell River. We here gained the highest altitude reached during the summer, the barometer indicating 4,500 feet above the sea. We found thousands of buffalo on this plain, but they are dependent upon the rain-water lakes, which are here quite extensive. For several days' march before reaching Pompey's Pillar, and on the march over to the Muscleshell, the Snow Mountains, showing perpetual snow, are constantly in sight to the west, and the Little Belt and Judith Mountains can be plainly seen to the northward.

The Muscleshell River has a bed about 150 feet in width, and was at the time we were on it a bold stream, 50 feet wide and one foot deep. The valley will average three-fourths of a mile in width, and is for the most part heavily wooded with cotton-wood. The hills on both sides of the valley are abrupt, and in many places are sharp cliffs of sandstone of firm, good variety. From the Swimming Woman's Fork down to the Big Bend, pine is abundant on the hills, but is only fitted for framing and railroad-ties.

The valley is rich and easy to irrigate, and but for the buffalo, which had stripped the valley bare, we would have found good grass.

If this valley were protected, it would soon form the nucleus of a prosperous settlement.

The water of the Muscleshell is excellent, and has the peculiarity of having decided diuretic qualities, which may be a matter of interest to the doctors. The course of the river for 75 miles traveled by us is nearly east and west; it receives many tributaries from the north and south, but none of them are running streams during the dry season.

At the Big Bend the river takes a due north course, which it keeps to the Missouri.

From the Big Bend we took a due east course, crossing to the Yellowstone side of the divide the second day's march. From the middle branch of the Big Porcupine, General Custer marched due east to the stockade near Glendive; the main column kept between the two Porcupines to the Yellowstone at the mouth of the Little Porcupine.

This region between the Yellowstone and the Muscleshell is the most desert-like country we passed over during the summer. The soil is sandy, and produces little but stunted cactus and sage, with some weeds of unknown but noxious species. The Porcupine Creeks have a course east of southeast, and not a south course, as laid down on the official maps. Each of these creeks is fringed with cotton-wood groves, and the hills near the junction of the creeks with the Yellowstone have considerable pine.

Coal.—The entire country passed over last summer is a coal-region; no special search was made for coal, but only a few days passed that outcroppings were not observed. Near the Missouri the coal is lignite, but hardens and improves in weight and quality as we go west.

Immense beds are found on the Little Missouri, but the Yellowstone Valley excels in the great thickness of its coal-beds and the quality of its coal, which, I think, is fully equal to Indiana block-coal.

Gold.—Some practical miners employed in the quartermaster's train frequently panned for gold, and on several occasions found decided traces of gold from the washings of sand from the small eddies of the Yellowstone above the mouth of Big Horn.

Navigation.—Last summer's experience very fairly proved that the Yellowstone is equally as well fitted for navigation as the Missouri above Fort Buford. Captain Marsh's boat, the Josephine, ascended Wolf Rapids without taking out a line. This rapid is the most difficult one on the Yellowstone, and the Josephine could have undoubtedly prosecuted her voyage successfully to the Crow agency, and, perhaps, to the falls of the Yellowstone. Rapids occur in many places on the Yellowstone, usually from the disturbance of the very swift current by a ledge of rock usually broken into fragments.

At the Wolf Rapids, six miles below the mouth of Powder River, and the main Buffalo Rapids, fourteen miles below the mouth of Tongue River, there is a fall of 4 feet in 250 yards, with a rough rocky bed.

The main Buffalo Rapid is no worse than the Wolf Rapid, and the Josephine will run over it without any difficulty at moderately high water. These rapids have the peculiarity of having deep water, and any steamboat that can stem the current of the Yellowstone can pass them by warping.

The Buffalo Rapids extend from the mouth of Sunday Creek down the Yellowstone for six miles; only the main one mentioned above presents any obstacle to navigation, and a few weeks' work with a steamboat, furnished with proper appliances, would clear the channel at the Wolf and Buffalo Rapids, and open navigation upon at least six hundred miles of the Yellowstone River. During June, July, and August, this navigation is as secure as that of the Upper Missouri without any improvement.

As to the future prospects of this Yellowstone country, the valley is surely as well adapted to tillage as the Rio Grande Valley, but, as in the Rio Grande Valley, irrigation alone could be depended upon. The abundance of coal answers the question as to fuel.

The tributaries, Powder River, Tongue River, &c., are noted for their

unexcelled grazing-ranges, and also the excellence of their pine-timber. All evidence goes to show the existence of gold upon all the mountain-streams, and it only needs the suppression of the murderous Sioux to soon settle this country with a prosperous community, whose commerce must be carried on by steamboat on the Yellowstone or by a railroad in the Yellowstone Valley.

Military posts.—From what I have heretofore said of the poor nature of the Yellowstone Valley between Glendive's Creek and Powder River, I could not recommend the establishment of a military post upon this part of the Yellowstone. A post located upon this stretch of the river, and, indeed, up to the mouth of Tongue River, would be difficult to build and keep up, from the scarcity of timber and the scarcity of grass either for grazing or hay.

Tongue River struck me as decidedly a good spot for a post. There is an area of at least sixty square miles of valley-land visible from the bluffs opposite the mouth of Tongue River. Cotton-wood timber of the best kind is practicably inexhaustible. The valley of Tongue River is as large and as well timbered as the Yellowstone Valley, and hay sufficient can be cut at no great distance.

The Buffalo Rapids are 14 miles below this point; but if these rapids prove troublesome for steamboats in low water, a good wagon-road can be made down the valley to a landing below the rapids.

Another excellent position for a military post would be on either side of the Yellowstone, near the months of Great Porcupine or Emmel's Creek, which come in almost directly opposite each other upon the Yellowstone. If desired to put the post north of the Yellowstone, old Fort Alexander is a good site, ten or twelve miles above Tongue River.

An equally good site will be found in the large valley fifteen miles in length opposite the mouth of Rose-Bud River.

A military post at any one of these points would be practically right in the very heart of the hostile Sioux country. Ever since I have been in this department, the hostile Sioux have made their home upon the Rose Bud, Tongue River, or Powder River, and within a few days' march of the several points I have recommended for a military post. The Yellowstone is now the southern limit of the buffalo range in the Sioux country, and a strong post of infantry and cavalry mixed, with a good steam ferry-boat, (indispensable,) will overawe or destroy the hostile Sioux. Until the Sioux are quelled, nothing can be done to even test the capabilities of the country when it is settled. I have great hopes of the future of the Yellowstone and its tributaries.

Game.—Game was quite abundant upon the entire route; antelopes very abundant in July and August, but were found to have died by thousands as we returned in September. The carcasses were found every hour from the Little Missouri all the way to Fort Lincoln. I since learn that this dying-off of this beautiful and useful animal extends over the vast country between the Missouri and Platte. I can account for it only as a universal murrain. The oldest *voyageurs* have never known of such a thing before; but Clement, the guide, says he once saw a murrain sweep off the buffalo. Elks and black-tailed deer were found on all the streams. Big-horn were killed on the Yellowstone frequently. Bear-sign was abundant, and three grizzleys were killed on the Big Porcupine.

Buffaloes were first found at Pompey's Pillar, the Indians having driven the herds off the Yellowstone.

On the divide between the Yellowstone and Muscleshell, and upon the latter stream, buffaloes were abundant and had exhausted the grass.

much to our cost in the loss of mules. The sharp-tailed grouse is found on all our route, and after passing the Little Missouri the sage-hen is abundant on the Yellowstone and Muscleshell, and is excellent game. I have never eaten any with the sage-flavor attributed to this bird, probably because I have never killed them very late in the fall.

Upon the Yellowstone and the Muscleshell enterprising fishermen were well rewarded and helped our short rations with wholesome fish.

THE QUARTERMASTER'S DEPARTMENT.

The service of this department was in the main good, with some exceptions. The train was gotten up in a hurry, and a great many of the mules purchased for the expedition were three and four year olds. The hard service, the light forage, and, more than all, the destitution of grass between the Yellowstone and Muscleshell River, proved fatal to many of these young mules. No mule should be purchased for the Quartermaster's Department younger than six years. The life was pulled out of these young mules on the muddy roads the first twenty days of the expedition.

On account of the rainy season, common to this region in June, I doubt if any expedition can start on the plains profitably, from the Missouri River, before the first of July.

The seasoned mules from Fort Abercrombie and the military posts of the department pulled loads averaging 5,200 pounds to the six-mule team, and came back in good order.

The new wagons purchased in Philadelphia are excellent.

The teamsters for the supply-train were picked up without any care. Men who had never driven a cart were hired to drive a six-mule team. This led to a great deal of trouble and damage, as these worthless men killed mules by their want of experience and their careless habits.

Good wagon-masters should be selected and sent to such places as Omaha and Leavenworth and allowed to select their own men from the old drivers, who can always be found at these large depots. The oats sent to the depot on the Yellowstone was invoiced at 168 pounds to the sack, but by trial only averaged 130 pounds to the sack. This great discrepancy cannot be accounted for by wastage in handling. The great deficiency was only found out upon the march, and greatly reduced our five pounds to the animal. Forage for such an expedition should never be put up heavier than 100 pounds to the sack.

The tentage for men and officers was of the worst quality, and in the rainy season there was little choice between a tent and outside of it. If the shelter-tent could be supplied, made of good duck, I should still prefer it for the enlisted men.

The fatigue-hat, new uniform, lasts in the field about three weeks; it then becomes the most useless, uncouth rag ever put upon a man's head. The cable screwed shoes proved a success and lasted better than any shoe I have seen.

THE COMMISSARY DEPARTMENT.

The expedition was well served in this department; indeed, we were rather embarrassed with overabundance. We took along and used one-third flour for the men's rations, the department having supplied Dutch ovens for baking. After the expedition had partly broken up, I sent around circulars to collect the opinions of the company-commanders upon the question of a part flour for field-service ration.

Only a small number of company-commanders responded, and the opinions are generally adverse.

I still believe that the health and good feeling of the men will be promoted on all occasions of service in the field by making at least one-third of the ration flour, and that baking-powders should be supplied by the Commissary Department, as the savings on candles and vinegar—the only articles savings could be made on—will not pay for the yeast-powder. The opinion of officers upon the insufficiency of the hard-bread ration is unanimous. A trip of a thousand miles over the plains, in this high latitude, will convince any man living that one pound is not enough to keep off the gnawings of hunger.

The soldier's food upon the plains is his bread and meat. Very often he has no time to properly cook his beans, and his bread is his main stay. I send appended a petition, signed, I think, by every officer on the expedition, asking for an increase of the hard-bread ration for troops serving in the field. The beef was averaged at too high a weight upon being received at Fort Rice. The cattle continually improved up to the time we reached Pompey's Pillar, but at no time would they average up to the weight they were received at. Large cattle should never be started on such expeditions, as they very soon become foot-sore. Coffee and rice should be double-sacked; ours was not, and led to waste. Hard-bread boxes should invariably be hooped with four iron bands, equi-distant upon the box instead of hooping only the ends of the boxes. This would save much now wasted in hard bread.

All canned articles should have boxes iron-hooped. Lard should be put up in quart-cans of the best kind; in the gallon-cans there is great waste.

I had a hard-working, pains-taking commissary, Second Lieut. P. H. Ray, Eighth Infantry, who kept his department in good order.

IN THE ORDNANCE DEPARTMENT

matters were generally satisfactory. Our shell for the three-inch guns would not explode. Upon experiment, only four out of thirty bursted. This was to be regretted, as we had some good chances to burst shell in groups of defiant Sioux.

I did not require the men to carry their knapsacks. They were packed with the men's clothing and hauled in the wagons. This is no test of the quality of the knapsack. I do not think the American soldier will ever be trained to carry the amount of gearing comprised in any one of the patterns of equipments I have yet seen.

The men all carried their ammunition in their waist-belts, with thimbles for the cartridges. They made the belts themselves.

THE MEDICAL DEPARTMENT.

There was a marked improvement over last year in this department. We were reasonably supplied with ambulances, and the number of old, worthless, broken-down soldiers in proportion was less than last year.

The Eighth, Seventeenth, and Twenty-second Infantry showed the good effects of campaigning in getting rid of their dead weights, and gave the surgeon very few calls.

There is no opportunity in the field to make a hospital-fund. This is wrong, and works a hardship upon the sick, who really need improved diet and delicacies in the hospital in the field.

I merely call attention to this without suggesting a remedy. We had

a case of a wounded officer—thigh-bone broken in the upper third—whom we carried four hundred miles upon a litter made by connecting the front and rear axles of an old spring-wagon by lodge-poles sixteen feet long, and swinging a stretcher-bed from and underneath the poles. This is the easiest conveyance I have ever seen for a wounded man. I recommend the invention to the Medical Department.

In conclusion, I desire to express my satisfaction with all the officers, staff and line, I had the honor to command; and to speak well of the rank and file for doing hard marching and hard labor upon the expedition with alacrity and cheerfulness.

It will require several weeks to complete a map of the route, which will be submitted as soon as possible.

Very respectfully, your obedient servant,

D. S. STANLEY,
Colonel Twenty-second Infantry, Commanding.

The ASSISTANT ADJUTANT-GENERAL,
Department of Dakota, Saint Paul, Minn.

WAR DEPARTMENT,
ADJUTANT GENERAL'S OFFICE,
Washington, April 16, 1874.

Official copy:

E. D. TOWNSEND,
Adjutant-General.

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